

Q1 the position of the receiver relative to the satellites. More particularly, each satellite transmits a signal that includes information as to what particular satellite is transmitting the signal and the timing of the signal. A GPS receiver receiving signals from two or more satellites can determine the length of time each signal took to reach the receiver for each satellite and, by the running a mathematical triangulation algorithm on the received data, pinpoint the location of the receiver relative to the satellites. Original GPS systems were relatively bulky and thus typically vehicle mounted. They were originally used in military applications, such as aircraft and missiles. They have since become common for use in navigation systems in automobiles. Eventually, the electronics of the receivers became inexpensive and small enough that there are now many commercially available palm-top GPS receivers. Typically a user of a GPS system must manually input his elevation relative to mean sea level in order for the device to work most accurately.

Paragraph beginning at line 12 of page 9:

Q2 The unit includes any reasonable processing means such as a digital signal processor (DSP), a micro processor, an applications specific integrated circuit (ASIC), a programmed general purpose processor, and/or analog circuitry for processing the GPS information indicating the location of the device as well as the location of all of the other devices received by the wireless communication transceiver to determine the location of each other device relative to itself, generating signals to report its own location via the transceiver to the other devices, combining that information with the digital compass output to determine the direction

A² in which the firearm is pointing and issuing a visual or audible warning when the weapon is pointing in the direction of another hunter that is within an unsafe distance.

Paragraph beginning at line 1, page 10:

A³ In an even more preferred embodiment of the invention, the device includes an output terminal for coupling to a mating input terminal of the firing mechanism of the firearm on which a signal is generated when the processor determines that the firearm is pointing toward another hunter that electronically disables the firing mechanism. The DISABLE signal is asserted when the processor detects that the firearm is pointing in the direction of another such device that is within an unsafe distance of the device.

Paragraph beginning at line 1, page 12:

A⁴ While the invention has so far been described in connection with firearms and hunters, it can be used in connection with any other weapon and in connection with any other activity for which it would be useful to know the location of other individuals.

Paragraphs beginning at line 4 on page 13:

A⁵ Figure 1 is a block diagram of an exemplary device 10 in accordance with a preferred embodiment of the present invention. The unit includes a GPS receiver 12, a digital compass 14, a wireless transceiver 16, a DSP 20, and a display device

18, all operatively coupled to provide the functionality set forth in this specification.

AK The device 10 is fixedly mounted to a firearm (not shown) so that the direction determined by the compass is indicative of the direction in which the firearm is pointing.

In operation, the GPS receiver 12 determines the location of the device 10 at predetermined intervals, e.g., every ten to fifteen seconds, and reports that information to the DSP 20. The DSP 20 controls the transceiver to transmit the location information periodically. The transceiver 16 also receives a report from a central base station providing the location of others of the devices at periodic intervals. The digital compass 14 also reports direction to the DSP 20 at periodic intervals. The interval for reporting the compass direction should be much smaller than the other intervals, namely, on the order of several times a second, since an individual can change the direction in which the firearm is pointing very quickly.

Paragraph beginning at line 1 of page 14:

AK The DSP 20 runs the information disclosing the location of all of the devices, including itself, and the compass information through an algorithm to determine whether there are any other devices that have last reported their location in the direction that the weapon is pointing and within an unsafe distance and provides that information to the user through the display 18. In a preferred embodiment of the invention, the device also has an output terminal for coupling to the firing mechanism of the firearm and outputs a signal disabling the firing mechanism when an unsafe condition is detected. In a preferred embodiment, the device disables the weapon when it is pointing within some angular range of the exact direction to

Q16 another device. This angular range should be selected to provide a reasonable safety margin and may be on the order of about (i.e., 2.5° - 22.5° to each side of the other device), but preferably about 5° - 25° . The angular also range may be dependent upon the distance between the devices.

Paragraph beginning at line 18 of page 14:

Q17 The display 18 and the manner in which the information is displayed thereon can take many forms. In a simple embodiment, an unsafe condition can be reported by illuminating a red light. Alternately or in addition, an audible warning tone can be sounded in the case of detection of an unsafe condition. In more sophisticated embodiments, the actual position of the other devices also or alternately can be provided through a textual display or a graphical map display on an LCD (liquid crystal diode) screen. Even further, a map can display the direction in which the other units have been moving and or provide a trace of the movement of the other units over a predetermined preceding amount of time, e.g., five minutes and/or the times of the last received reports of their locations. This would assist users in providing them with a predictor of the likely direction in which the other individuals are moving since the last report.

In the Claims

- Q18
1. A method of providing enhanced safety among a plurality of hunters hunting in a particular locale, said method comprising the steps of:
 - (1) providing a wireless communication system covering said locale; and